CLAIMS

What is claimed is:

1. A system for communicating between an outside computer and a cluster of computers comprising a first computer and a second computer, comprising:

a primary instance of a transmission control protocol resident on the first computer;

a primary data structure coupled to the primary instance describing the state of an association defining pathways between the cluster and the outside computer;

a secondary instance of a transmission control protocol resident on the second computer;

a secondary data structure coupled to the secondary instance replicated from the primary data structure;

an intra-cluster network coupling the first computer and the second computer;

a synchronization process coupled to the primary data structure and the secondary data structure replicating the primary data structure to the secondary data structure across the intra-cluster network to synchronize the structures;

wherein the primary instance comprises a first node in the association between the outside computer and the cluster and wherein the outside computer comprises an opposite node;

wherein the secondary instance comprises a second node in the association between the outside computer and the cluster;

wherein the association is configured such that the first node and the second node appear to the opposite node as different addresses for the same node.

2. The system of claim 1, wherein the primary data structure is resident on the first computer and the secondary data structure is resident on the second computer.

3. The system of claim 1, wherein the outside computer comprises a cluster of computers.

4. The system of claim 1, wherein:

the transmission control protocol comprises SCTP;

the primary instance is a primary instance of SCTP;

the secondary instance is a secondary instance of SCTP.

5. The system of claim 1, wherein the synchronization process is triggered by detection of impending failure of the first instance.

6. The system of claim 5, wherein the synchronization process occurs once after detection of impending failure of the first instance.

7. A system for communicating between an outside computer and a cluster of computers comprising a first computer, a second computer, and a third computer, comprising:

a primary instance of a transmission control protocol resident on the first computer;

a primary data structure resident on the second computer coupled to the primary instance describing the state of an association defining pathways between the cluster and the outside computer;

a secondary instance of a transmission control protocol resident on the third computer coupled to the primary data structure;

an intra-cluster network coupling the first computer, the second computer, and the third computer;

wherein the primary instance comprises a first node in the association between the outside computer and the cluster and wherein the outside computer comprises an opposite node;

wherein the secondary instance comprises a second node in the association between the outside computer and the cluster;

wherein the association is configured such that the first node and the second node appear to the opposite node as different addresses for the same node.

8. The system of claim 7, wherein the outside computer comprises a cluster of computers.

9. The system of claim 7, wherein:

the transmission control protocol comprises SCTP;

the primary instance is a primary instance of SCTP;

the secondary instance is a secondary instance of SCTP.

10. A method of communicating between an outside computer and a first computer using a transmission control protocol comprising:

instantiating a primary instance of the transmission control protocol on the first computer;

instantiating a corresponding instance of the transmission control protocol on the outside computer;

instantiating a secondary instance of the transmission control protocol on a second computer coupled to the first computer;

building an association defining pathways of communication between the primary instance and the corresponding instance wherein the secondary instance is defined as an alternate address for the primary instance;

storing state information regarding the association in a primary data structure coupled to the primary instance;

replicating the primary data structure to a secondary data structure coupled to the secondary instance;

communicating between the primary instance and the corresponding instance through the pathways defined by the association using the transmission control protocol;

updating state information regarding the association in the primary data structure; and

synchronizing the secondary data structure to reflect updates to the primary data structure.

11. The method of claim 10, wherein:

the first computer and the second computer are part of a cluster having an intra-cluster network; and

replicating and synchronizing occur across the intra-cluster network.

12. The method of claim 10, wherein the corresponding instance of the transmission control protocol on the outside computer does not recognize that the primary instance and the secondary instance are not the same instance, but does recognize that it is transmitting to an alternate address.

13. The method of claim 10, wherein an action of synchronizing occurs after every action of updating.

14. The method of claim 10, wherein an action of synchronizing is triggered on a time schedule.

15. The method of claim 10, wherein an action of synchronizing is triggered based on the occurrence of an event.

16. The method of claim 15, wherein an action of synchronizing is triggered based on the detection of possible failure of the first instance.

17. The method of claim 10, wherein:

the transmission control protocol comprises SCTP;

the primary instance is an instance of SCTP;

the corresponding instance is an instance of SCTP; and

the secondary instance is an instance of SCTP.

18. A method of communicating between an outside computer and a first computer using a transmission control protocol comprising:

instantiating a primary instance of the transmission control protocol on the first computer;

instantiating a corresponding instance of the transmission control protocol on the outside computer;

instantiating a secondary instance of the transmission control protocol on a second computer coupled to the first computer;

building an association defining pathways of communication between the primary instance and the corresponding instance wherein the secondary instance is defined as an alternate address for the primary instance;

storing state information regarding the association in a primary data structure coupled to the primary instance but located on a separate computer from the primary instance and coupled to the secondary instance;

communicating between the primary instance and the corresponding instance through the pathways defined by the association using the transmission control protocol;

updating state information regarding the association in the primary data structure; and

on failure of the first computer on which the primary instance resides, communicating between the secondary instance and the corresponding instance through the pathways defined by the association as stored in the primary data structure.

19. The method of claim 18, wherein:

the first computer and the second computer are part of a cluster having an intra-cluster network..

20. The method of claim 18, wherein:

the transmission control protocol comprises SCTP;

the primary instance is an instance of SCTP;

the corresponding instance is an instance of SCTP; and

the secondary instance is an instance of SCTP.

21. The method of claim 18, wherein the corresponding instance of the transmission control protocol on the outside computer does not recognize that the primary instance and the secondary instance are not the same instance, but does recognize that it is transmitting to an alternate address.

22. A method of communicating between an outside computer and a first computer using a transmission control protocol comprising:

instantiating a primary instance of the transmission control protocol on the first computer;

instantiating a corresponding instance of the transmission control protocol on the outside computer;

instantiating a secondary instance of the transmission control protocol on a second computer coupled to the first computer;

building an association defining pathways of communication between the primary instance and the corresponding instance wherein the secondary instance is defined as an alternate address for the primary instance;

storing state information regarding the association in a primary data structure coupled to the primary instance;

communicating between the primary instance and the corresponding instance through the pathways defined by the association using the transmission control protocol;

updating state information regarding the association in the primary data structure; and

upon detection of a triggering event, replicating the primary data structure to a secondary data structure coupled to the secondary instance.

23. The method of claim 22 wherein the triggering event is the detection of impending failure of the primary instance.